



FIG. 1

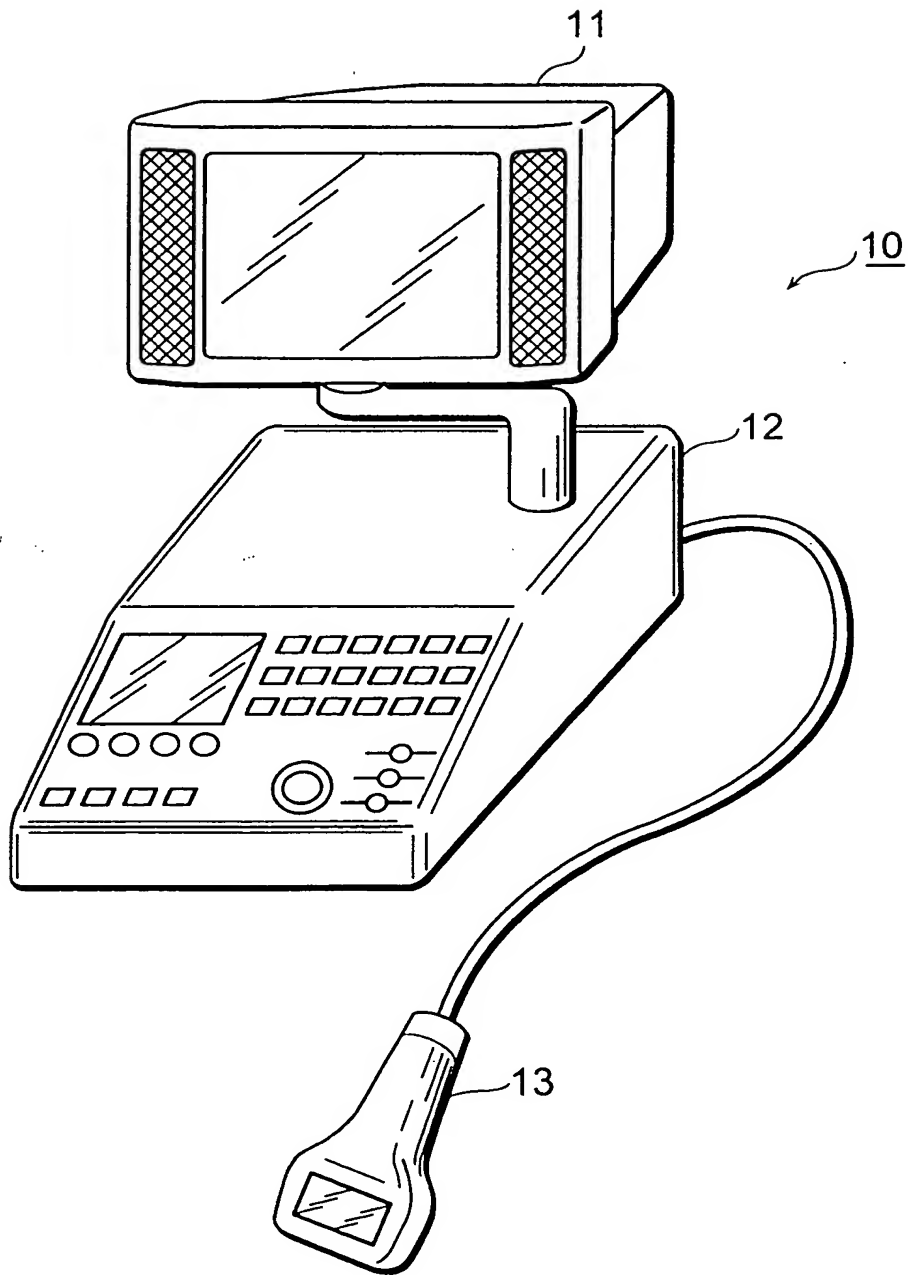


FIG. 2

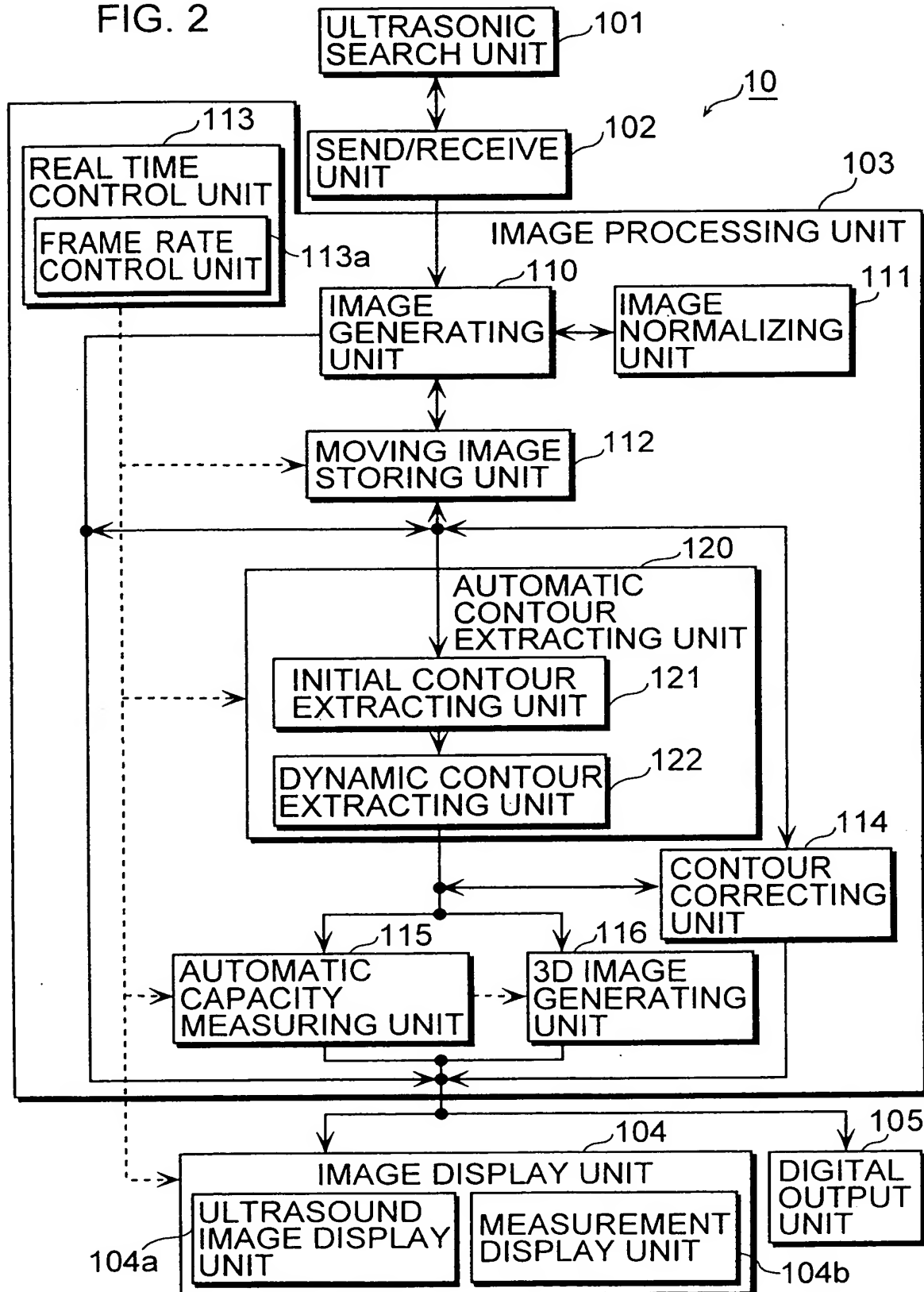


FIG. 3A

TWO
CHAMBER
VIEW

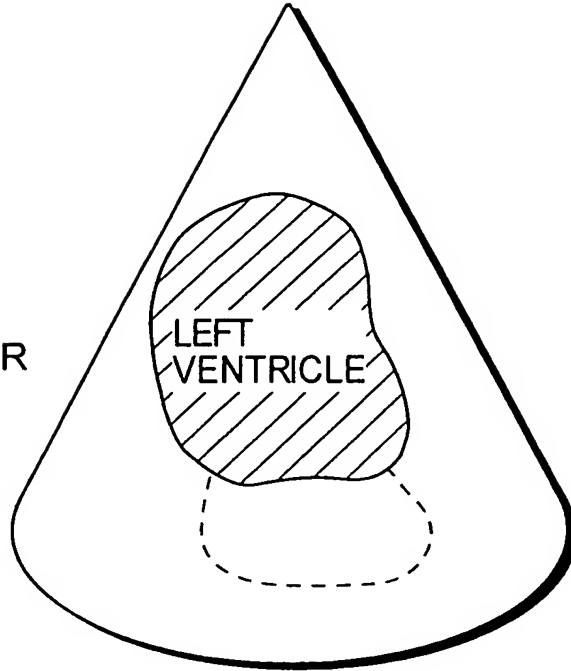


FIG. 3B

FOUR
CHAMBER
VIEW

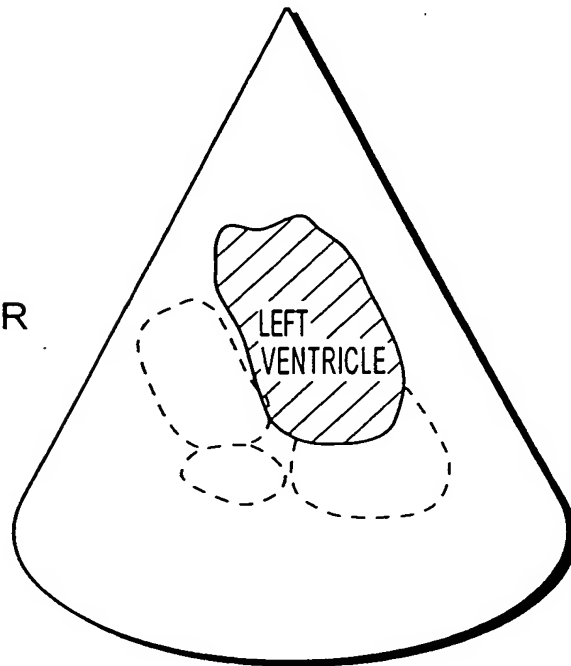


FIG. 4

SINGLE PLANE AREA LENGTH METHOD

MAJOR AXIS "h", CROSS-SECTIONAL AREA "A"



$$\text{VOLUME "V"} = 8A^2/3 \pi h$$

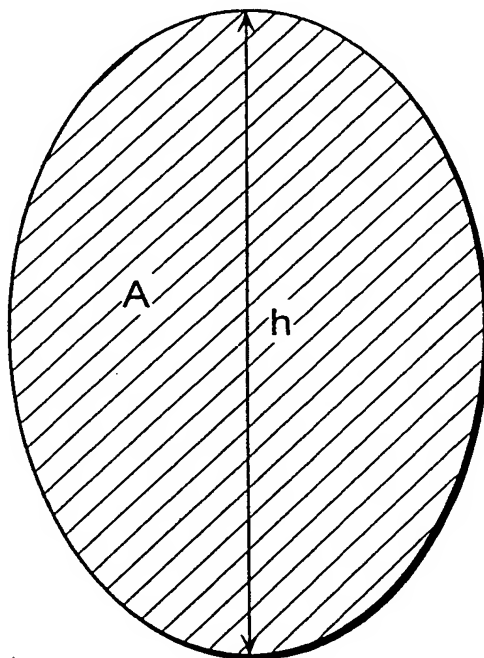


FIG. 5

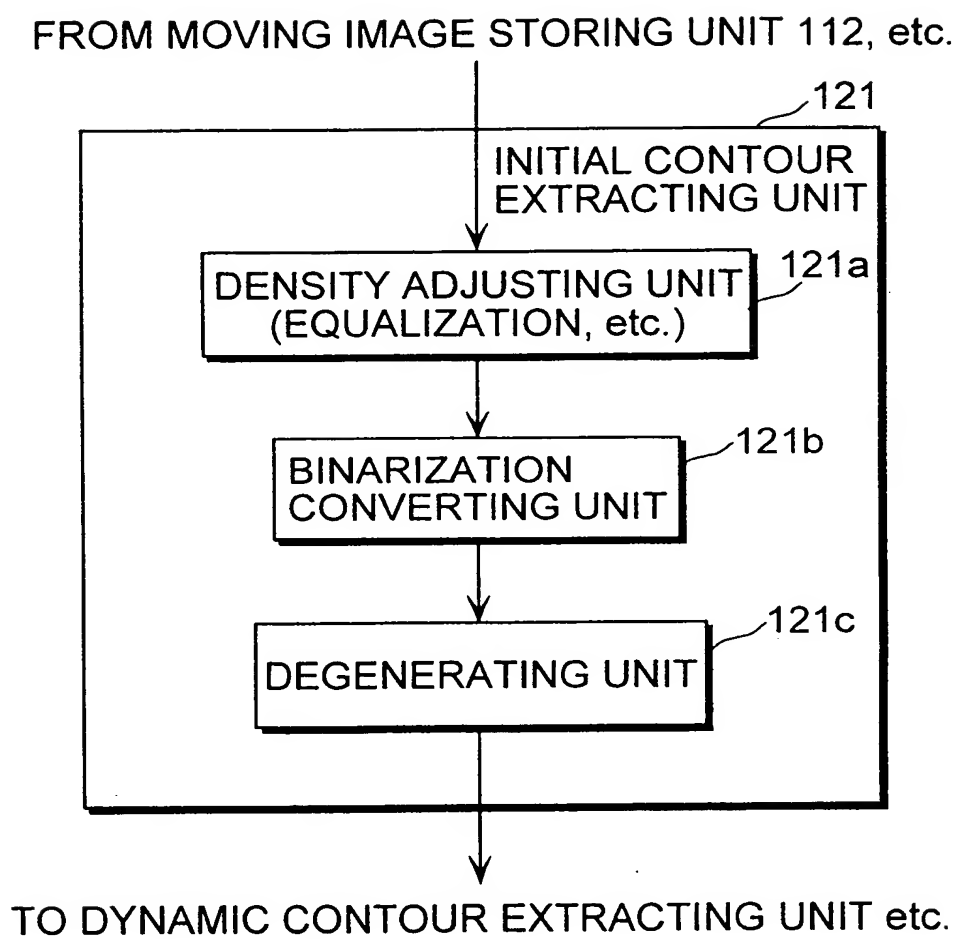


FIG. 6A

EQUALIZATION

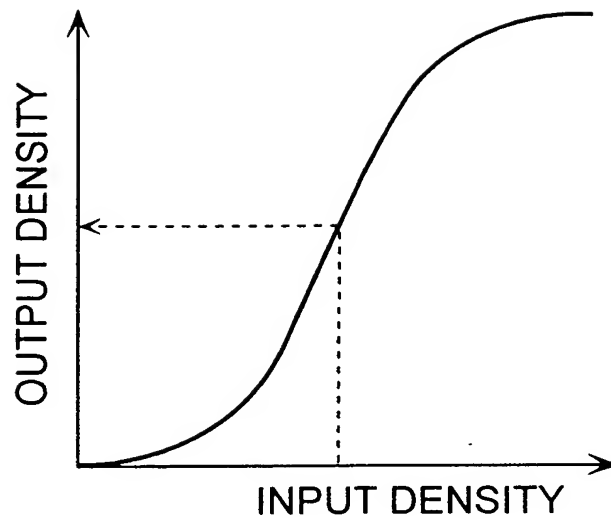
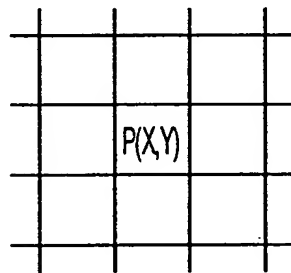
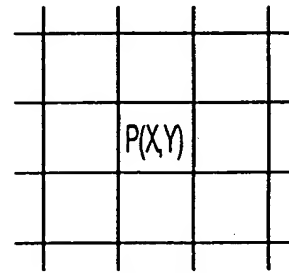
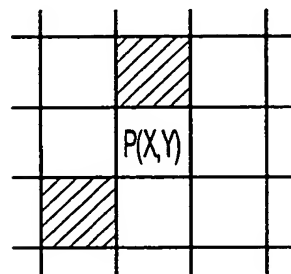


FIG. 6B

DEGENERATE
OPERATIONCRITERION PROPERTY:
"DENSITY BEING WHITE"

TRUE

PIXEL $P(X, Y)$
REMAINING WHITE

FALSE

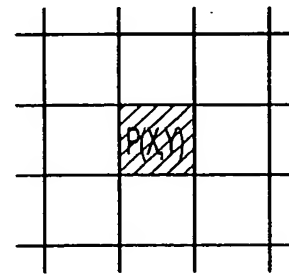
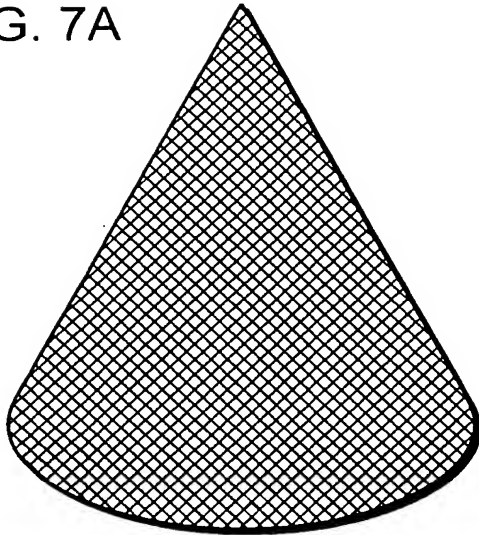
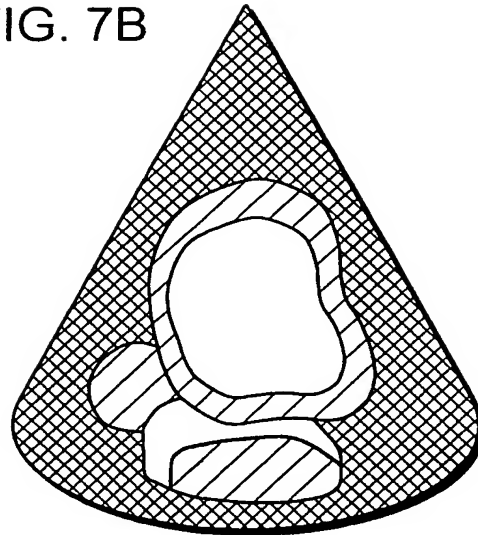
PIXEL $P(X, Y)$
CONVERTED TO BLACK

FIG. 7A



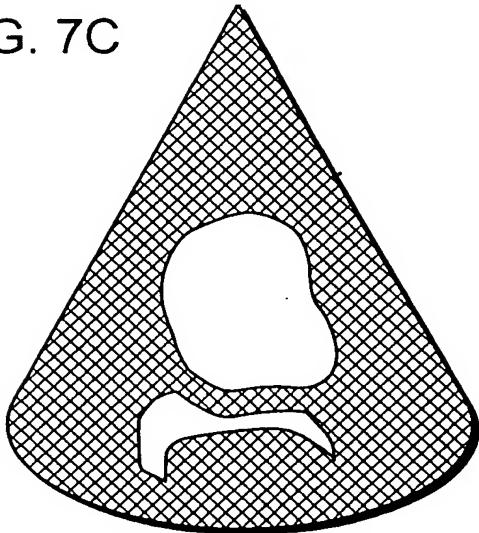
BEFORE EQUALIZATION

FIG. 7B



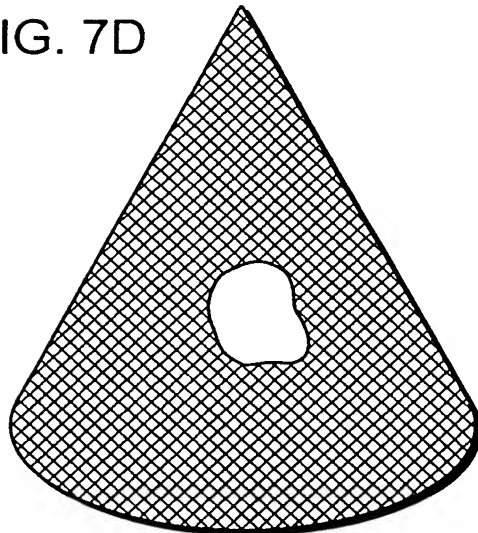
AFTER EQUALIZATION

FIG. 7C



AFTER BINARIZATION
CONVERSION

FIG. 7D



AFTER DEGENERATE
OPERATION

FIG. 8A

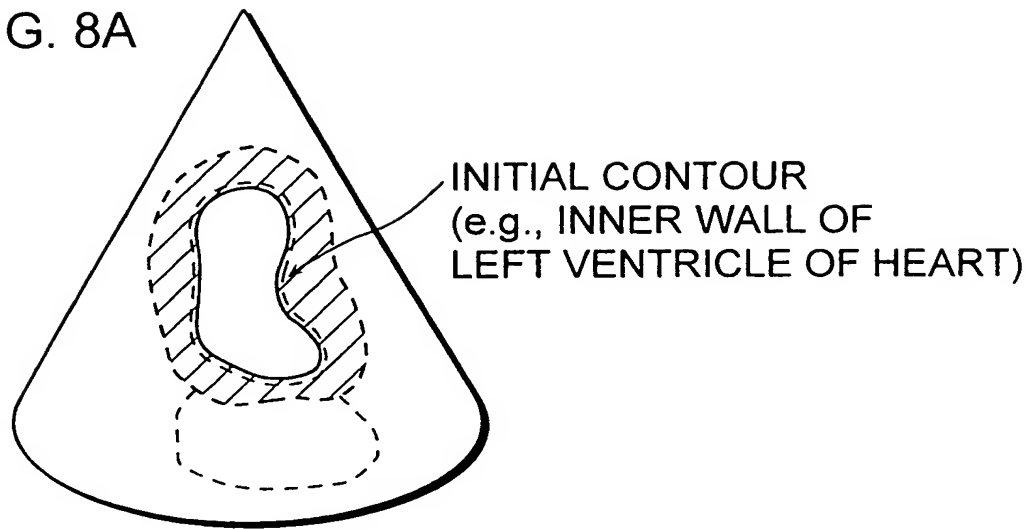


FIG. 8B1

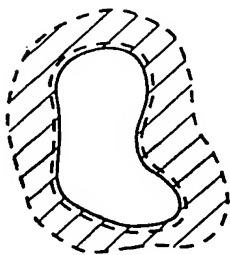


FIG. 8B2

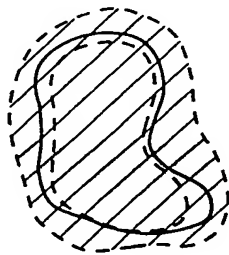


FIG. 8B3

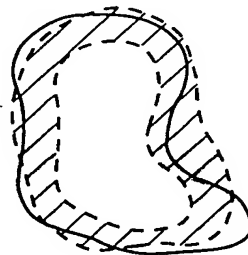


FIG. 8B4

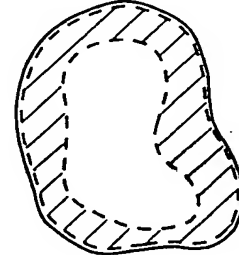


FIG. 9A

EXTRACTED
CONTOUR A

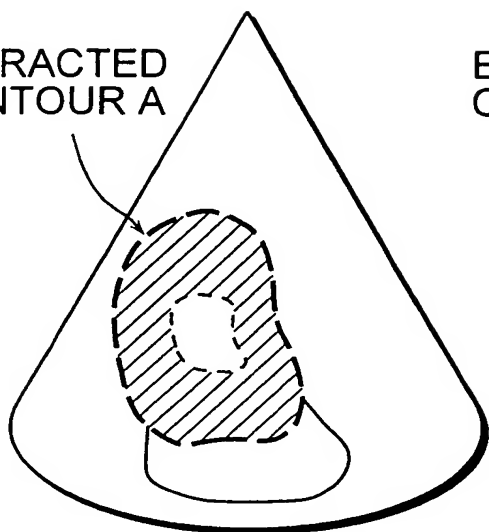


FIG. 9B

EXTRACTED
CONTOUR B

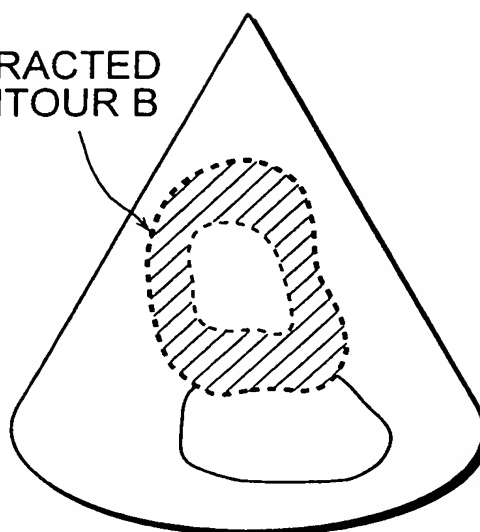
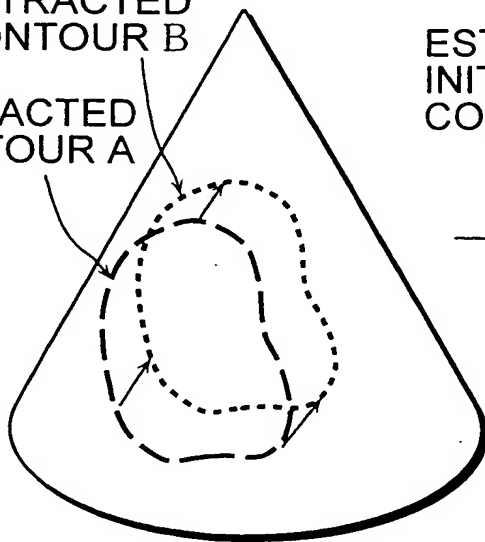


FIG. 9C

EXTRACTED
CONTOUR B
EXTRACTED
CONTOUR A



ESTIMATED
INITIAL
CONTOUR

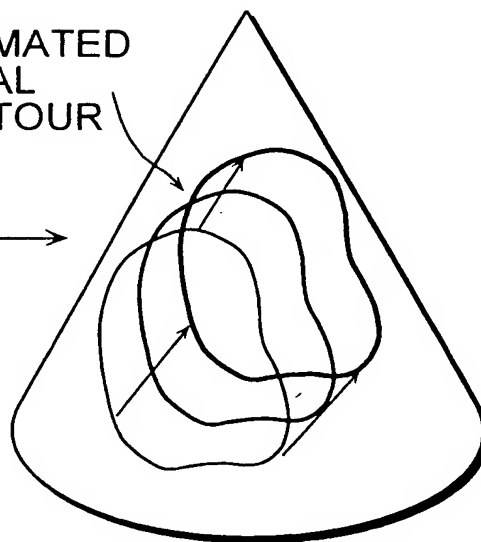


FIG. 10

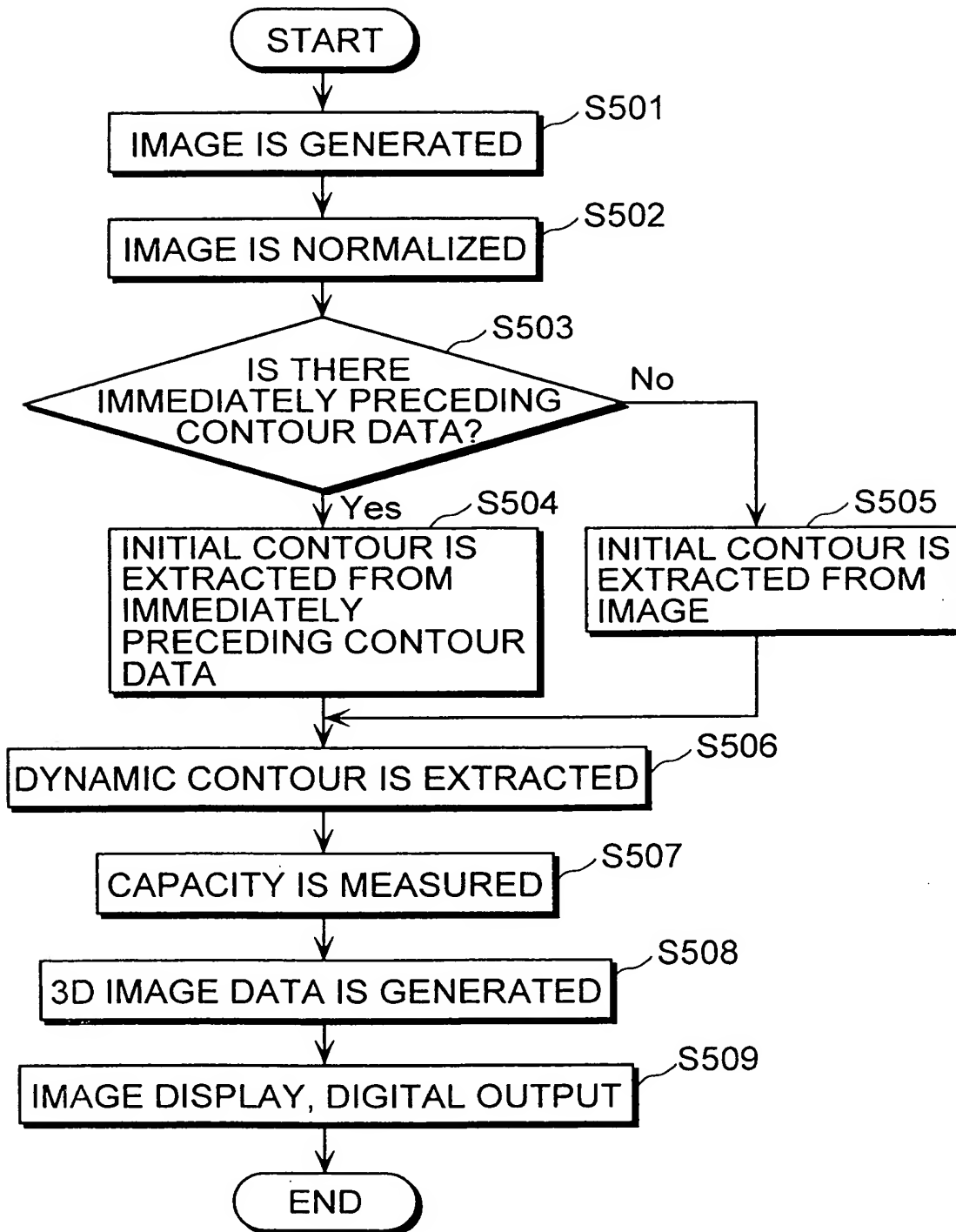


FIG. 11

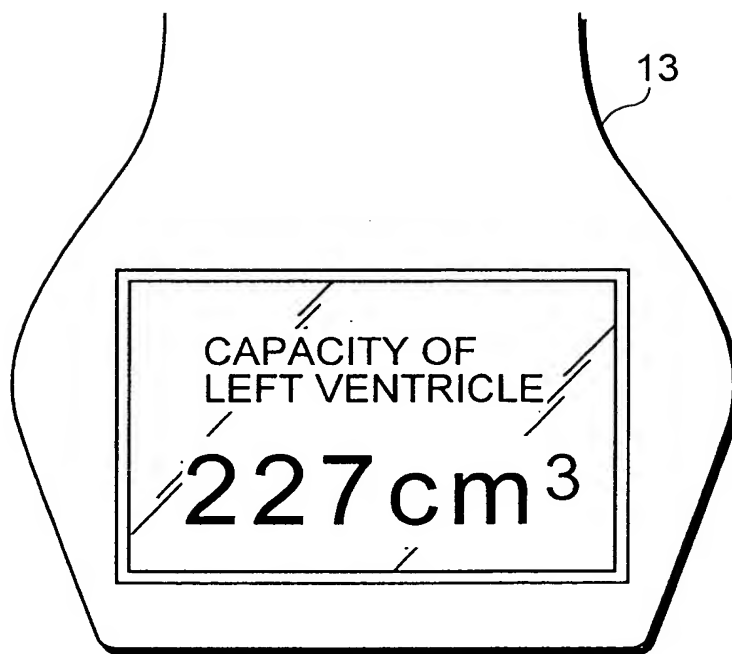


FIG. 12

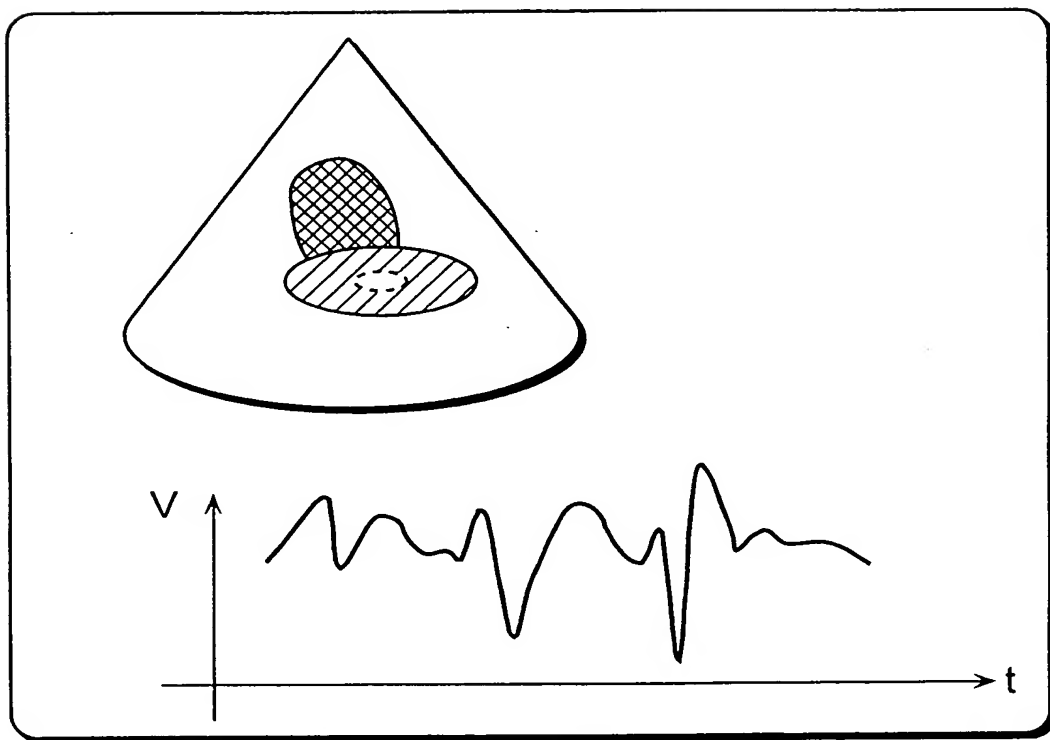


FIG. 13

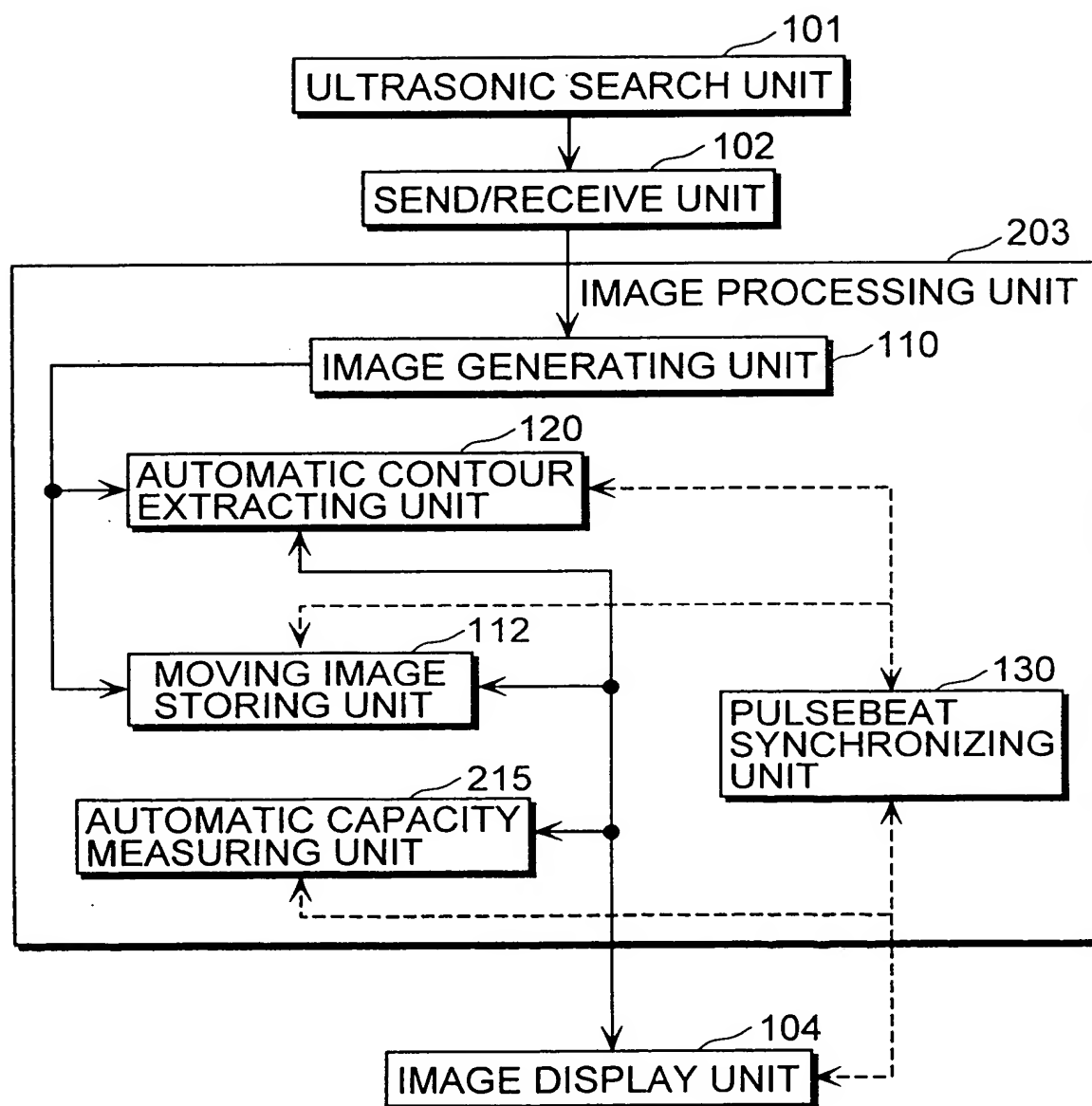


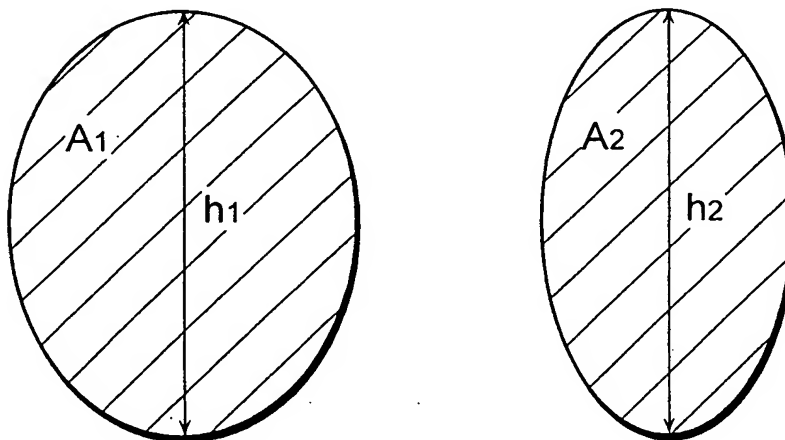
FIG. 14

BIPLANE AREA LENGTH METHOD

MAJOR AXES h_1 AND h_2 , OF WHICH LONGER ONE IS h .
CROSS-SECTIONAL AREAS A_1 AND A_2



$$\text{VOLUME } V = 8A_1 A_2 / 3 \pi h$$



SECTIONS THAT SHARE SAME
AXIS AND ARE ORTHOGONAL TO EACH OTHER

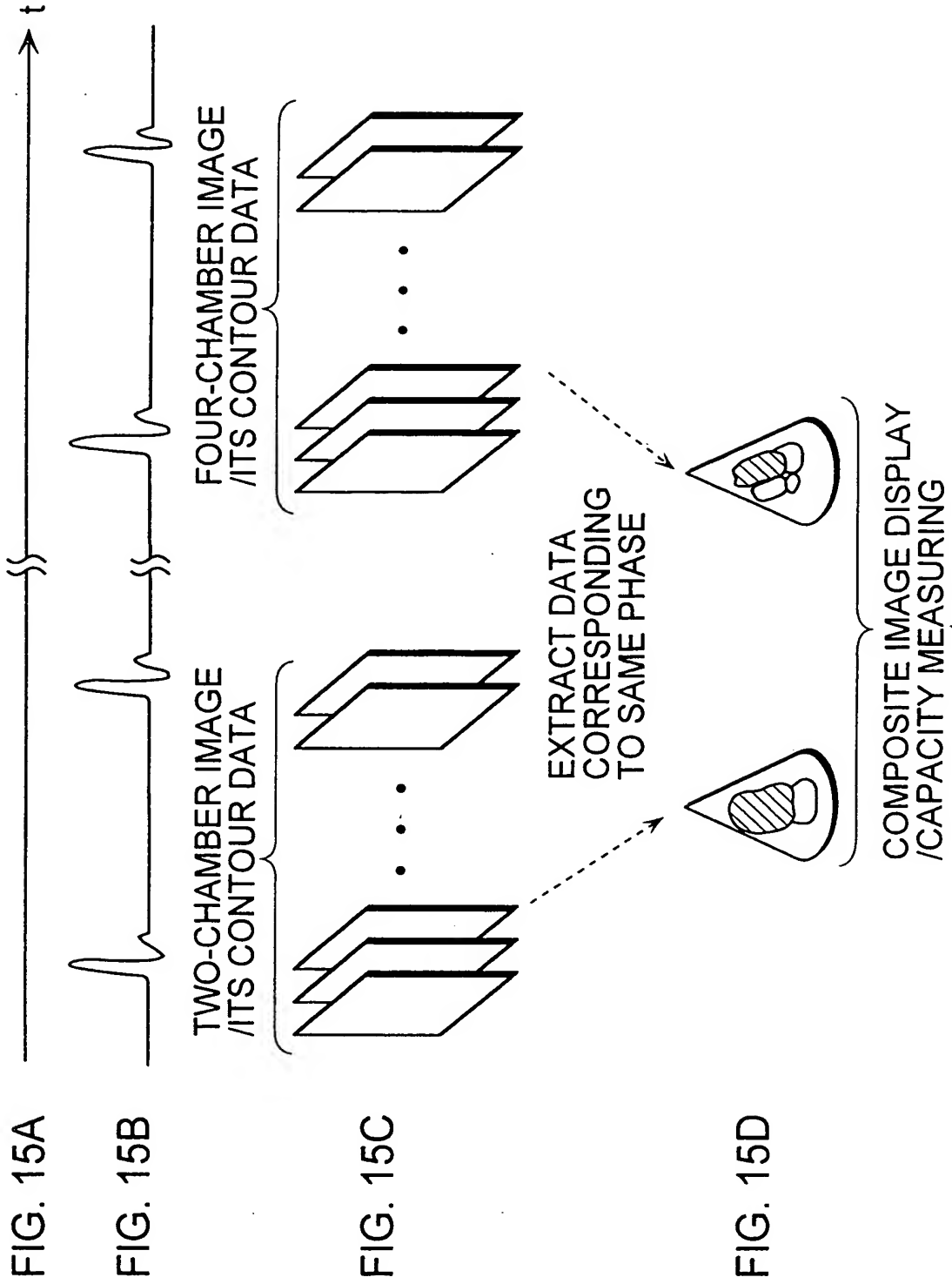


FIG. 16

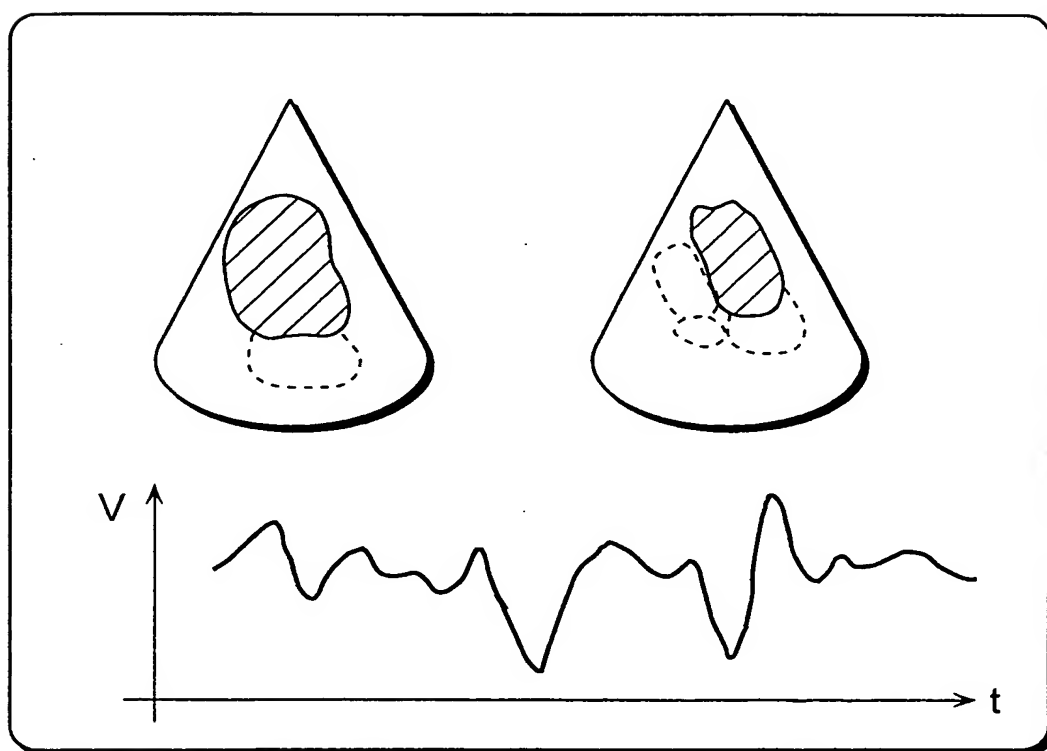


FIG. 17A

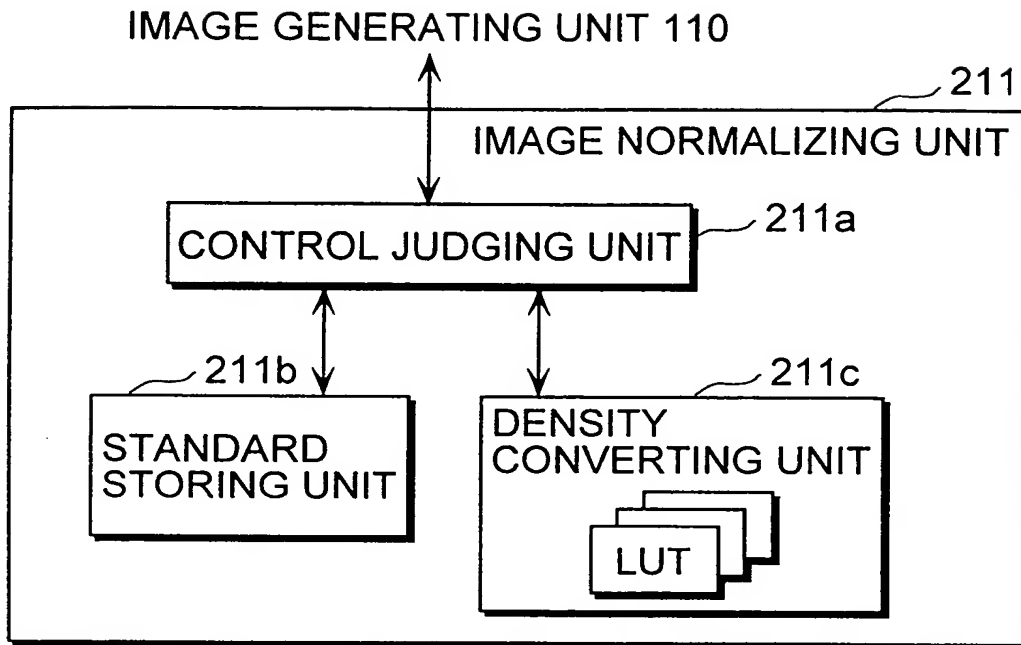


FIG. 17B

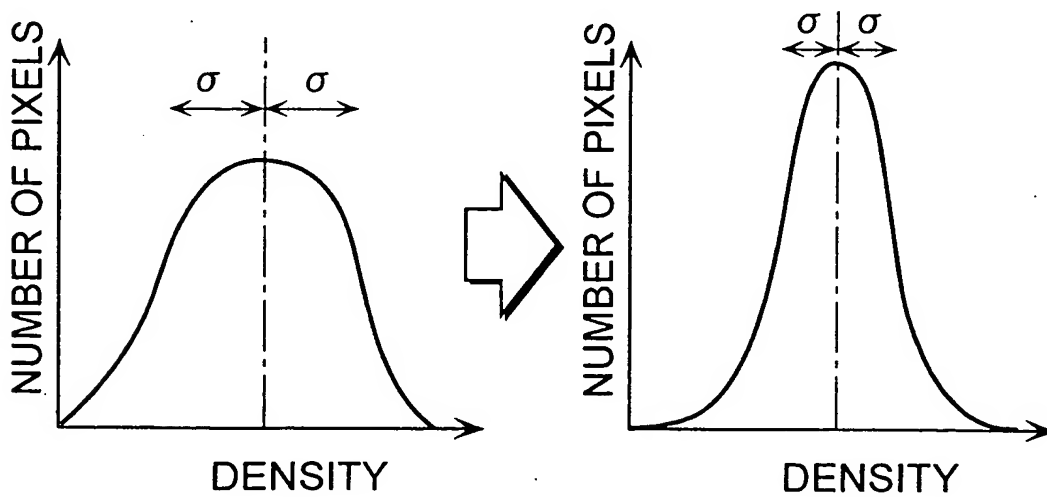


FIG. 18

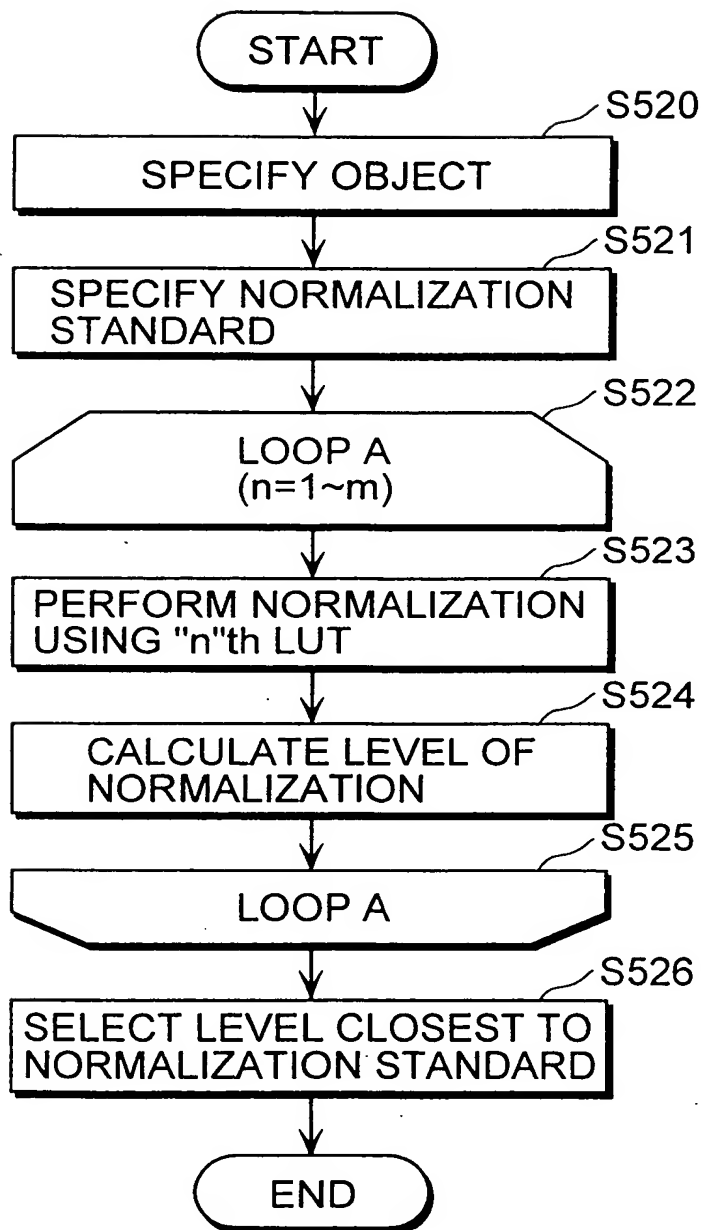


FIG. 19

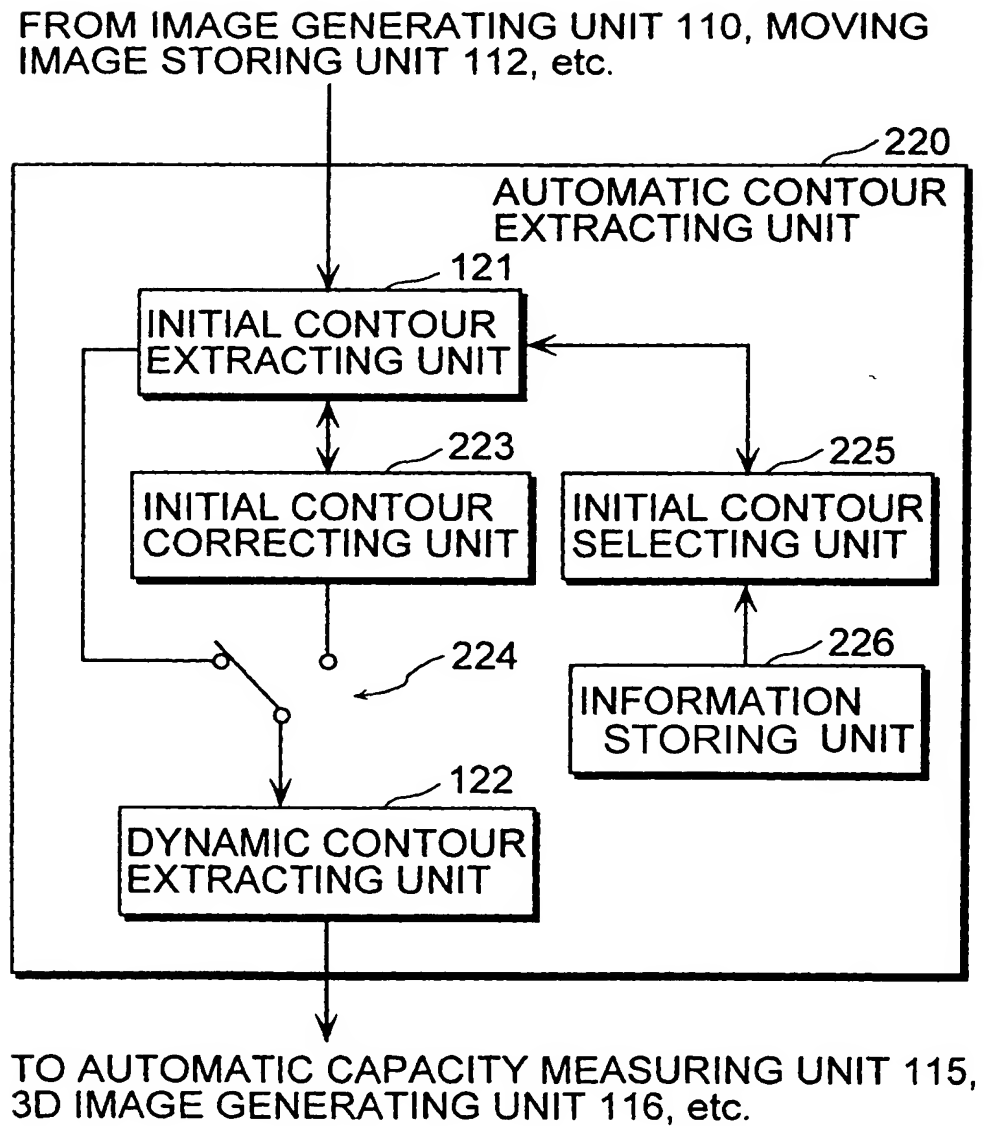


FIG. 20

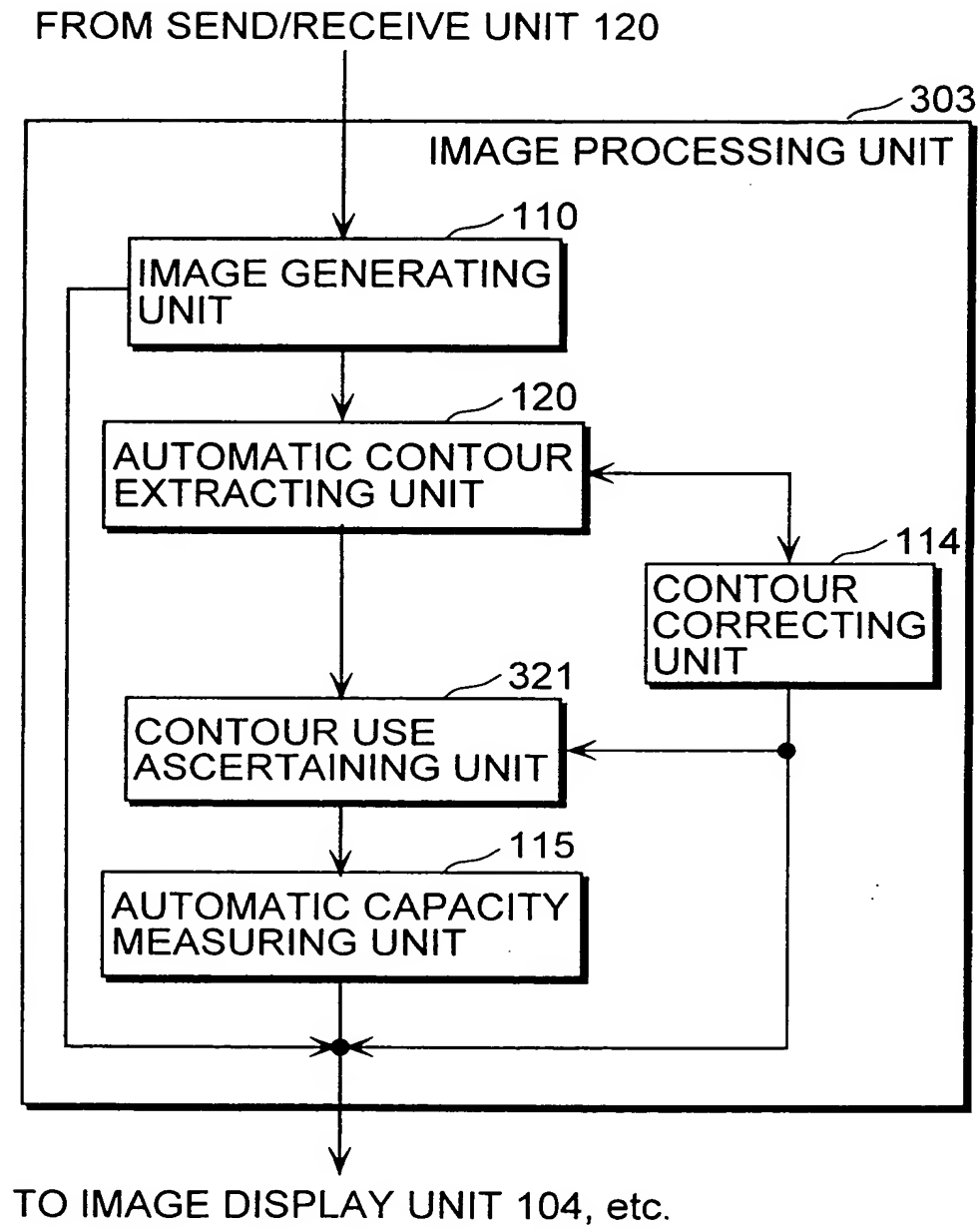


FIG. 21

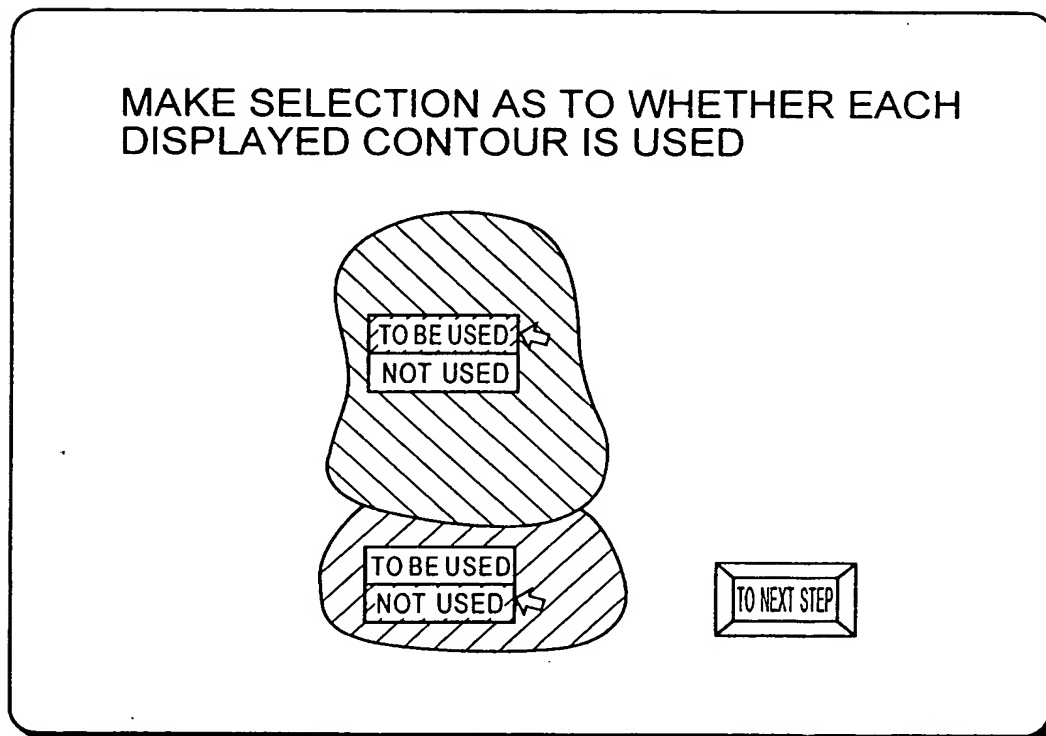


FIG. 22

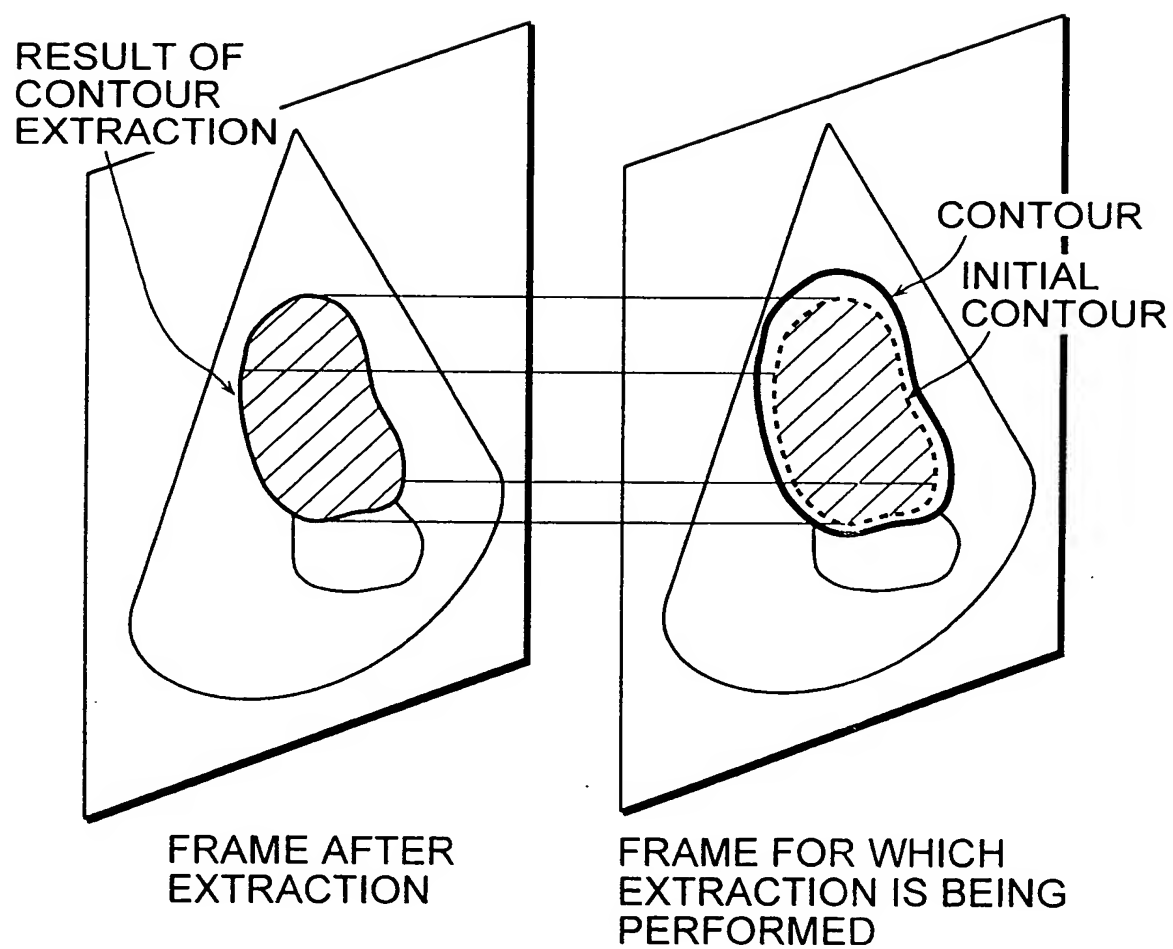
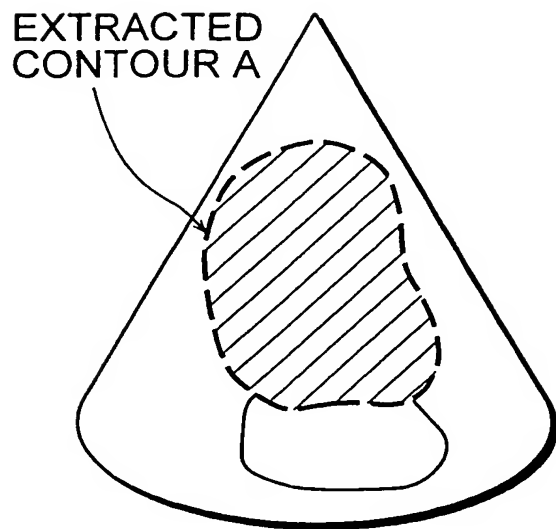
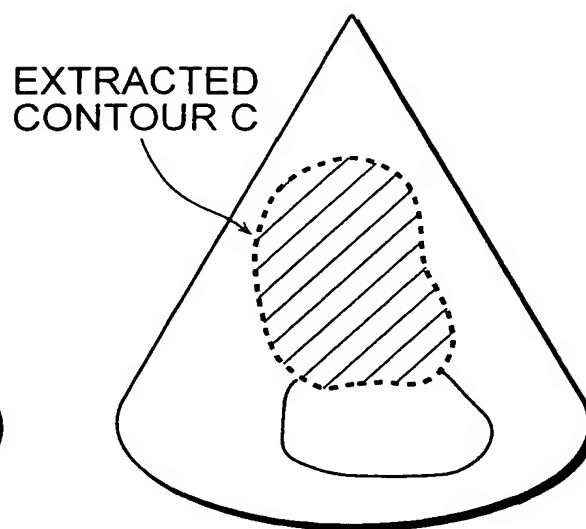


FIG. 23A



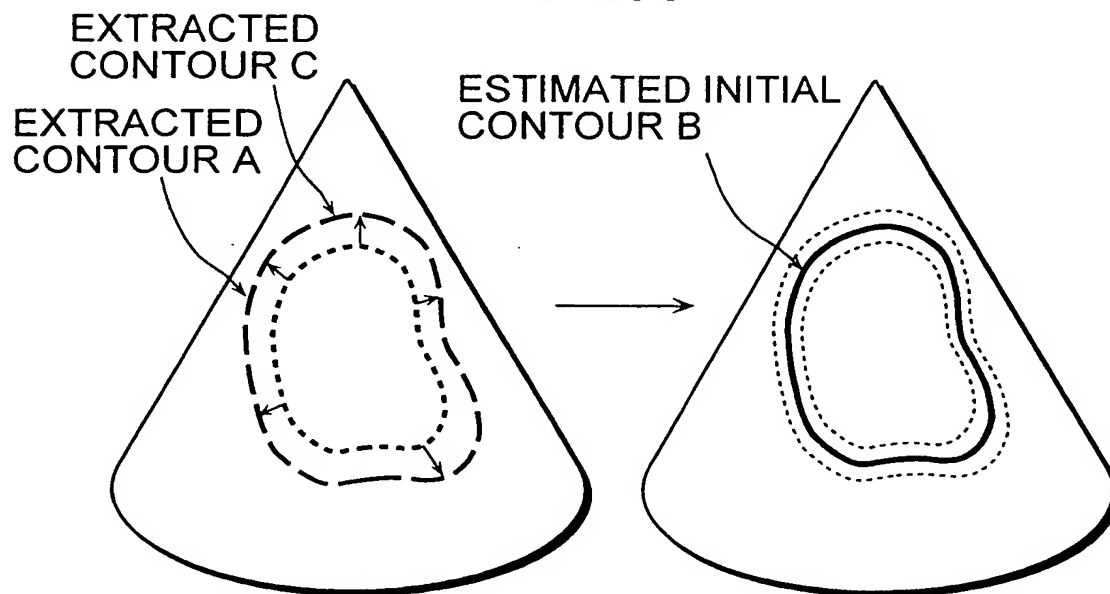
EXTRACTION RESULT A

FIG. 23B



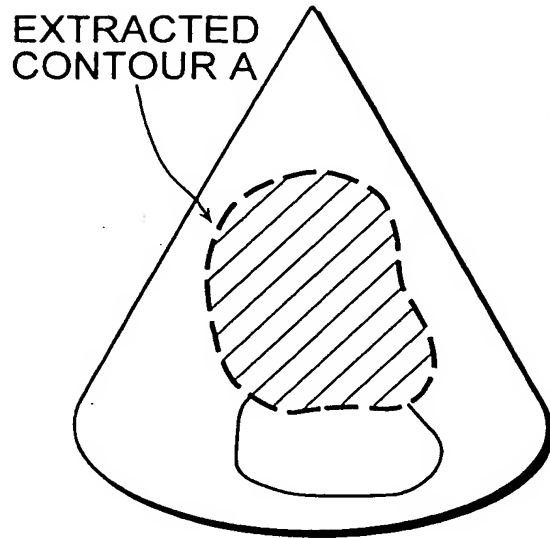
EXTRACTION RESULT C

FIG. 23C



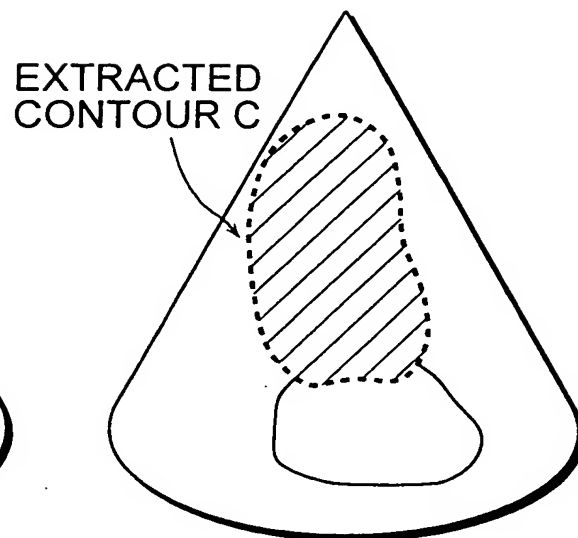
EXAMPLE OF INITIAL CONTOUR
SETTING BY INTERPOLATION

FIG. 24A



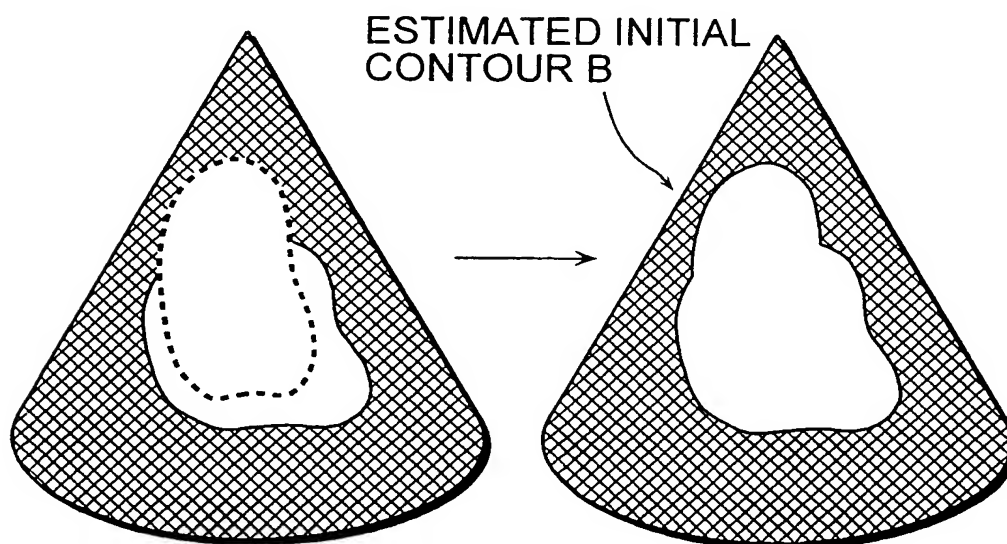
EXTRACTION RESULT A

FIG. 24B



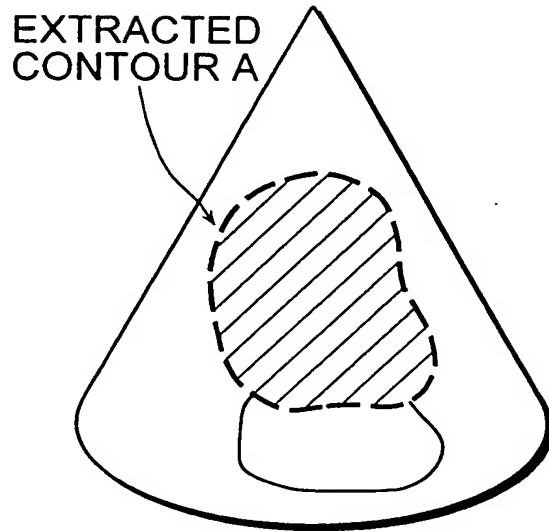
EXTRACTION RESULT C

FIG. 24C



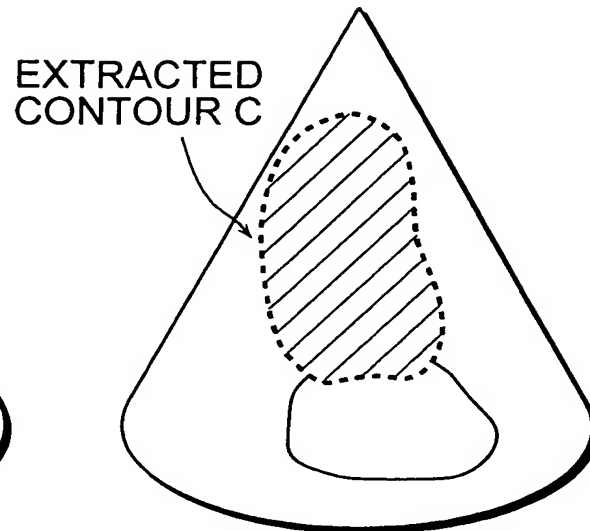
EXAMPLE OF INITIAL CONTOUR SETTING BY
BINARIZATION CONVERSION/OR-OPERATION

FIG. 25A



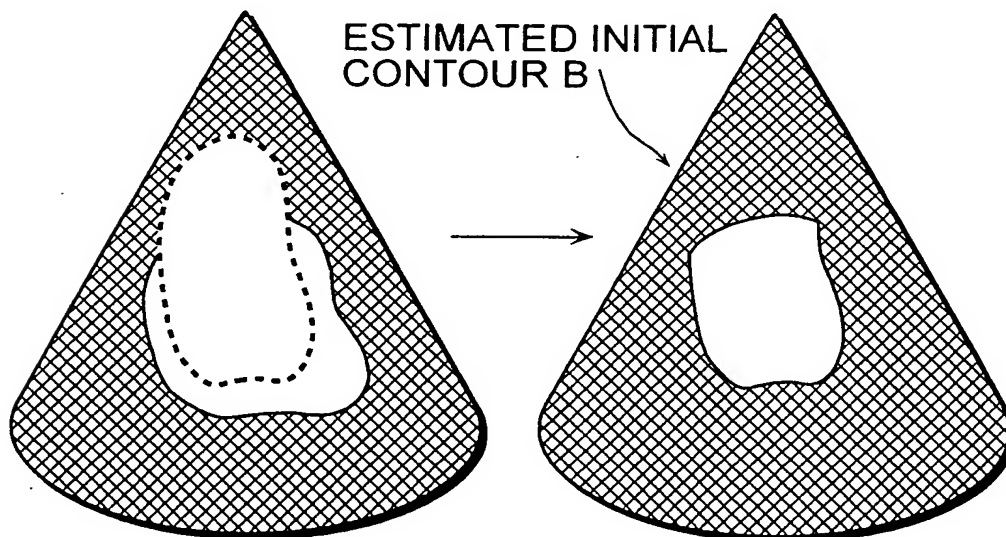
EXTRACTION RESULT A

FIG. 25B



EXTRACTION RESULT C

FIG. 25C



EXAMPLE OF INITIAL CONTOUR SETTING BY
BINARIZATION CONVERSION/AND-OPERATION

FIG. 26

SIMPSON METHOD

RADIUS A_i (OR CROSS-SECTIONAL AREA S_i)
OF EACH SLICE

INTERVAL h BETWEEN TWO SLICES



$$\begin{aligned}\text{VOLUME } V &= \sum S_i \times h \\ &= \sum (\pi \times A_i^2 / 4) \times h\end{aligned}$$

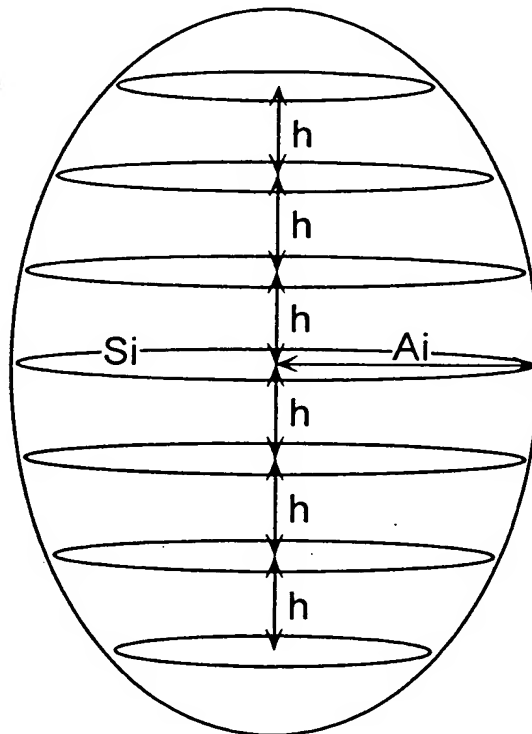


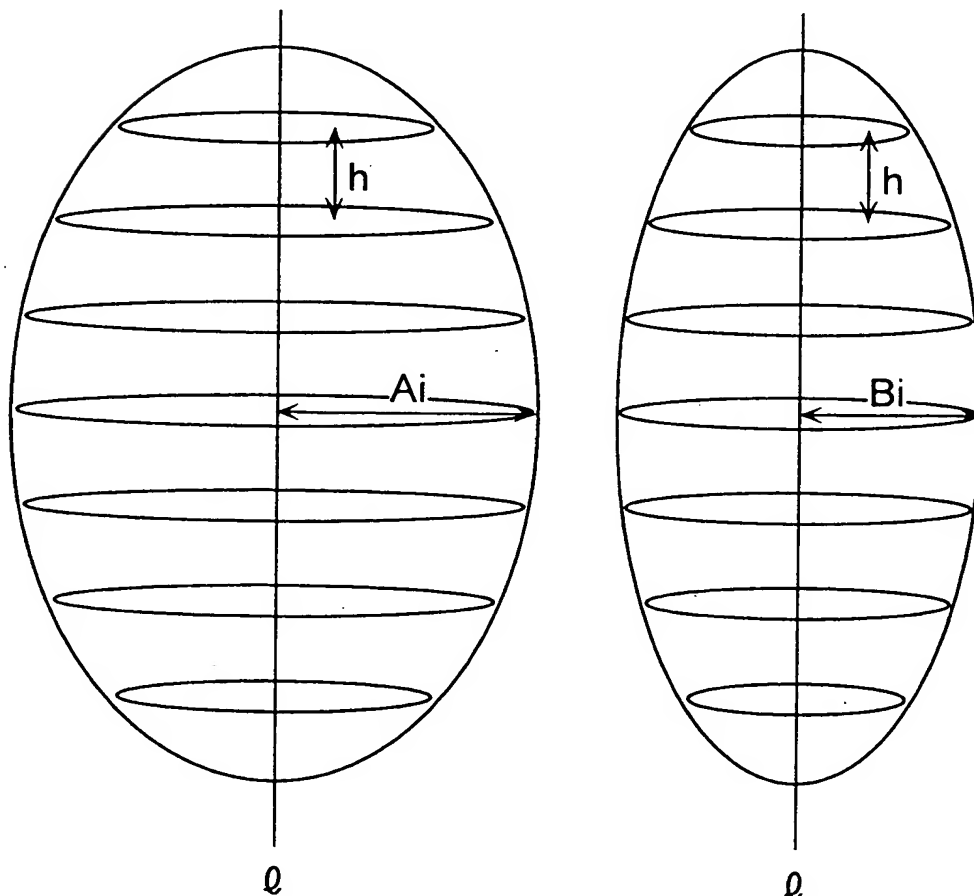
FIG. 27

MODIFIED SIMPSON METHOD

EACH RADIUS A_i/B_i OF TWO CROSS SECTIONS
THAT ARE ORTHOGONAL TO EACH OTHER
INTERVAL " h " BETWEEN SLICES



$$\text{VOLUME "V"} = \sum A_i B_i \times h \pi$$



CROSS SECTIONS THAT SHARE SAME
AXIS " θ " AND ARE ORTHOGONAL TO EACH OTHER

FIG. 28

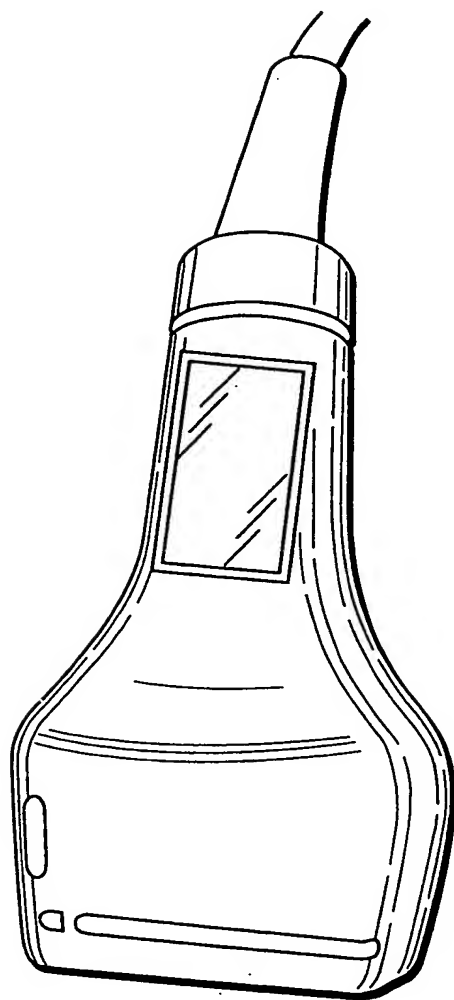


FIG. 29

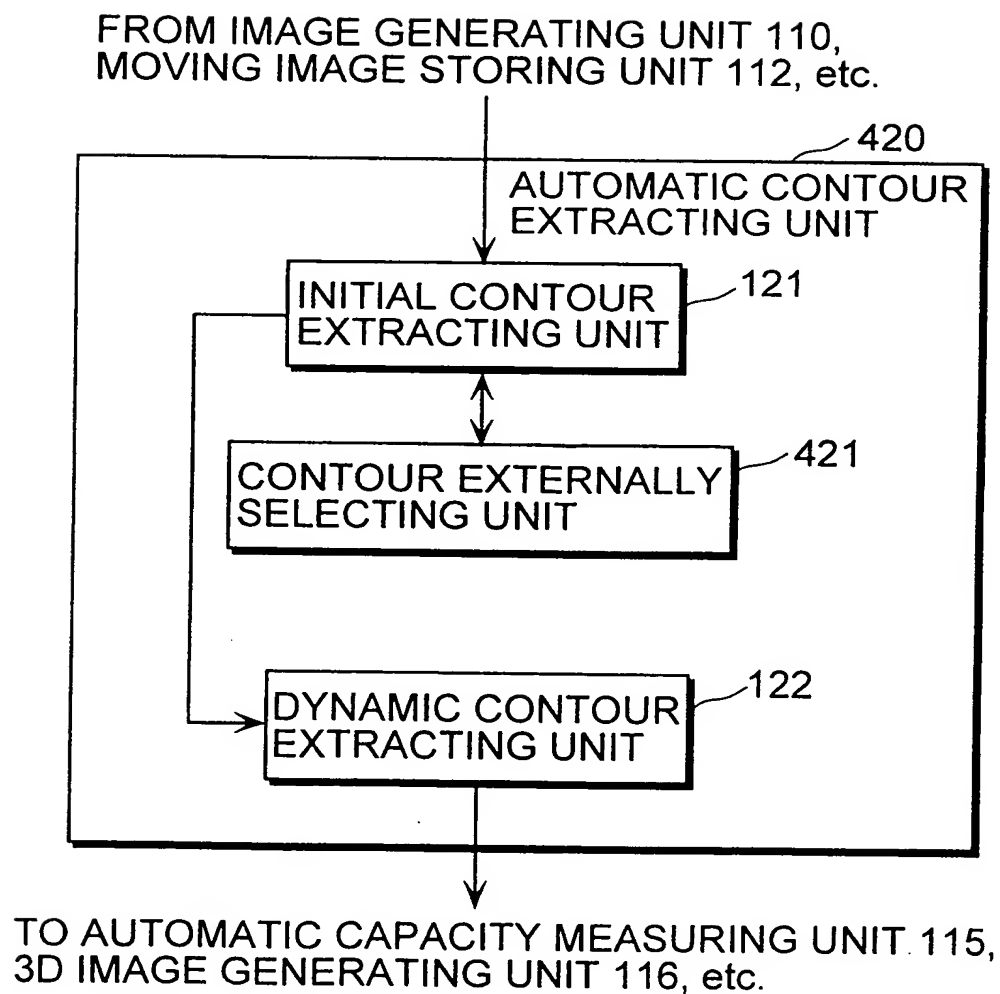


FIG. 30

